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ABSTRACT

This final report on a project at the University of California at Los Angeles (UCLA) on strategic planning for libraries and information resources in the research university begins with an introductory section on levels of consideration in planning; issues of current concern (effects of technology, economics of libraries, changes in the academic enterprise, and changes in patterns of publication); program goals and objectives; and strategic management. Project components, the time schedule and budget, administration, advisory committee, disciplinary task forces, supporting studies, research projects, and communications are described in the second section. The next section covers management of the project, including time schedule and budget, management of sub-projects, and project data files. The following specific results are discussed in the fourth section: (1) internal management concerns, including administrative structure and personnel; (2) external management concerns, including publishing, political/social/legislative/legal issues, cooperative programs, and technological concerns; (3) needs for print publications; (4) the integration of library/computer/telecommunications; (5) inter-institutional cooperation; (6) acquisition of foreign material; (7) library services; (8) information centers; (9) user interfaces; (10) digitized images; (11) off-campus users; (12) expert service development; (13) indexing and abstracting services; (14) desktop publishing; (15) database development; (16) file conversion; and (17) project management. (MES)

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LONG-RANGE STRATEGIC PLANNING

FOR LIBRARIES & INFORMATION RESOURCES

IN THE RESEARCH UNIVERSITY

THE FINAL REPORT ON
A RESEARCH PROGRAM ON
THE FUTURE OF THE ACADEMIC RESEARCH LIBRARY

31 December 1989

Graduate School of Library & Information Science
University of California, Los Angeles

IR053203

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TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

1. INTRODUCTION AND SUMMARY

This is the Final Report to the Council on Library Resources for the UCLA Project on Strategic Planning for Libraries & Information Resources in the Research University. The project was undertaken at UCLA to explore means by which a major university could carry forward strategic planning for library and information resource management, with specific emphasis on involvement of faculty.

The project was one outgrowth of a conference held at the UCLA Lake Arrowhead Conference Center in December 1981. It brought together university administrators, academic librarians, and library educators for the purpose of identifying the effects of technology on the future of universities and of the research libraries within them. But there was one vital element missing from that conference -- the community of research scholars, the persons depending upon libraries and information resources for their research and instruction.

During the ensuing months, discussions between staff of the CLR and of UCLA led to the proposal for an effort in planning that would directly involve the research faculty as well as librarians and administrators.

In this Final Report, we will present specifics of the approach taken, of the results obtained, and of the final accounting for expenditures.

SCOPES OF CONSIDERATION

Strategic management in general must consider a range of contexts, both internal and external, and at various levels of detail. With respect to university libraries and information resources, in particular, one must simultaneously deal with at least three levels:

- The "library", taken narrowly as the traditional collection of books, journals, and a wide range of other media, with its inherent set of facilities, operations, and services;
- The "library of the future", taken broadly as the entire-set of information resources and facilities, including libraries taken narrowly but adding to them computing centers, media centers, film and data archives, museums, and telecommunication networks;
- The "research library network", consisting of the entire set of libraries and other kinds of information resources acting as a cooperative and integrated whole in support of scholarship.

It is not easy to keep these separate, and the pressure to slip from one to the other is great, sometimes without realizing that one has done so.

At each level, one must deal with issues of concern to the institution and its management, with issues of politics and social policy, with legislative and legal constraints. One must deal with cooperation and competition among universities and their libraries, with relationships also cooperative and competitive with publishers and other suppliers of information resources, with the changing effects of technology and the economics of equipment. One must deal with the range of services and products to be provided and with the market for them, the constituency of users to be served.

THE FOCI OF CURRENT CONCERN

In deciding to undertake this investigation, several issues were seen as paramount in importance: 1) Effects of technology, 2) Economics of libraries, 3) Changes in the academic enterprise, 4) Changes in patterns of publication.

Effects of Technology on Academe

The first, effects of technology, is surely the most dramatic. the question to be faced is, How should the university and its libraries respond to those effects? It was in fact the primary focus of the 1981 Lake Arrowhead Conference.

The continuing increases in functional capabilities, capacities, and speeds of computers, combined with equally spectacular decreases in cost, have revolutionized our entire society, the university as much as any other institution. Today the microcomputer is ubiquitous in the university, replacing mainframes in virtually every area of routine and user managed data processing. But at the same time, the supercomputer is adding new dimensions to research, to conceptualization of problems, and to the means for processing overwhelming quantities of data.

The capabilities for data acquisition, data storage, and data display have also spectacularly increased over the past decade. Sensors, scanners, and other means for raw data entry now provide means for acquiring amounts of data orders of magnitude greater than previously. Optical disk formats -- CD-ROM, WORM, videodisk -- have increased our ability to store data, again by several orders of magnitude. Displays now provide storage resolutions that rival the best of printed pages. Indeed, these areas of technology have recently developed at a pace far greater even than have computers.

The growth in telecommunications capabilities has paralleled that of data acquisition, storage, processing, and display. The result is that the data can be transmitted at rates commensurate with the processing capabilities -- today at 100 million bits per second, tomorrow at even higher.

All of that technological development clearly is affecting the university both in what its faculty and students do and in what administrators and librarians must do. What are those effects and how do we deal with them?

Economics of Academic Libraries

A separate concern is the economics of academic libraries. In part, of course, this concern is related to technological change. First, libraries have been forced to make major investments in automation of operations and services, in programming, in installation of equipment, in conversion of catalogs and other files, in training of staff and of the students and faculty being served. Those costs have been of great magnitude, both for capital investments and for operating expenses; they will continue in the future as obsolescent and even obsolete equipment and related software must be replaced. Second, they have been forced to deal with costs incurred in new means of data access -- the online computer databases. Third, they must respond to the demand for new media -- the optical disk stores, in particular -- that must be acquired to serve the needs in instruction and research; the costs will place additional burdens on the budgets for acquisition of materials.

Indeed, the pressures on the acquisition budget are almost certainly the most pernicious economic problem faced by academic research libraries. They are creating conflicts within the library in fighting the diversion of funds from books to journals to databases to external services. They are creating conflicts between the library and the faculty and even among the faculty members, as different choices adversely affect different disciplines. The past decade and more has seen rates of inflation in journal prices, especially those from foreign commercial publishers, that threaten every other commitment of the acquisition budget. And those price increases, since they largely focus on journals, affect merely today's budget but force commitments of resources for the indefinite future.

Another major economic concern is with the collection itself -- its storage, its preservation, the tools for physical access to it. Major research collections for good reasons still grow at an exponential rate, so buildings must be built to house them -- whether on campus or in depository facilities. The capital costs for construction represent fifty to one hundred year commitments. The collections of every major research library are in states of disintegration. Some of that indeed is due to deficient buildings and lacks of environmental controls that have exacerbated the problem of embrittlement. The result is that a major capital resource of the university -- its library collection -- is falling apart before our eyes.

How do we deal with these economic pressures?

Changes in the Academic Enterprise

The university itself is continually changing. How should libraries and other information resources respond to those changes?

Even though the labels on departments may be the same today as yesterday, the substance is dramatically different. The subjects taught, the means for instruction, the foci of research -- these all undergo change in response to internal development within each discipline. They also must change in response to external pressures from society -- changes in the demography of students, in governmental priorities, in the means for funding of programs.

How do we identify these changes in academic program and determine what needs to be done to support them with adequate information resources?

Changes in Patterns of Publication

Primarily as a result of the impact of technology on publishing but also in part as a result of changes in the disciplines themselves, there are changes occurring in patterns of publication. The new media -- computer databases, online access to them, electronic mail and facsimile, distribution of data and images in optical disk formats, desk-top publishing -- these all provide new means for communication of scholarly information. How will they affect the traditional means? At what pace will they develop? What changes will they make in the substance of what is communicated?

How do we determine what are real changes in publishing and when those changes will be meaningful to operations of libraries and other information facilities?

GOALS AND OBJECTIVES

Early on in the project, an effort was made to identify goals and objectives that would relate information resources to the academic program as explicitly as possible:

1) Increase the reputation and national visibility of the university, especially as that may depend upon or be affected by information resources;
2) Improve the quality of instruction at every level, especially as it may depend upon or be affected by information resources;
3) Increase the research productivity of faculty as it may depend upon or be affected by information resources;
4) Expand the role of information resources in obtaining funding of academic programs for both instruction and research;
5) Increase the information literacy (i.e., ability to use information resources) of students and other users;
6) Increase the amount of information available to students and other users;
7) Maintain the position of the university at the forefront of developments in the information resources field itself -- educational, professional, technical, and technological;
8) Develop the means to assure that faculty and students have access to the technical information support needed to use information resources effectively;
9) Increase the level of cooperation with foreign countries and institutions, both generally and specifically with respect to information resources;
10) Increase the effectiveness in use of expenditures, throughout the university, in acquiring, producing, and using information resources;
11) Increase the degree of cooperation among academic units in the use of information resources;
12) Develop single point access to the full range of information

resources in the university;
13) Deliver information directly to work stations and PCs;
14) Provide support to personalized database systems for faculty and students;
15) Establish equitable personnel policies for the full range of staff concerned with information resources;
16) Protect the University's interests with respect to external policies affecting its ability to use information resources in support of its academic responsibilities.

STRATEGIC MANAGEMENT

The project under CLR sponsorship was intended, then, to experiment with means for responding to these questions, with specific emphasis on identifying the needs of faculty. The focus initially was to be on "strategic planning for libraries and information resources in the research university", with the view that one must deal with such questions by establishing a plan.

One point, though, became evident at the outset. Planning in this area cannot keep pace with developments as they actually occur. The most dramatic evidence of this fact was the initiation, about six months after the start of the CLR project, of a UCLA planning effort for the entire campus academic program. Suddenly, the primary element for planning of information resources -- the academic program -- was itself the focus of a vastly greater effort.

The UCLA Library itself is a highly dynamic organization, constantly at the forefront of developments of every kind. The planning effort repeatedly was faced with the reality of implementation of services and facilities within the library, not at some planned future time but today. Conversely, the very means used for the project -- direct involvement of faculty -- stimulated demands that presented the University Library management with immediate problems.

It became painfully clear that something more than "planning" was necessary if this kind of dynamic environment was to be dealt with. The answer, once found, is evident and is represented by a simple though vital change in one word. We need to be concerned with strategic management, within which planning may play a role but at most a minor supportive one.

Strategic Management is a concept of increasing importance in modern industrial management. The following a definition of the term as it will be used in this discussion:

> Strategic management is that part of general management of organizations that emphasizes the relationships to external environments, evaluates the current status of them and the effects of future changes in them, and determines the most appropriate organizational response to them.

With this definition, a distinction is made between such externally focused management and that which is internally focused, which will be characterized as either "tactical management" (concerned with the most effective deployment

of resources within the organization) or "operational management" (concerned with assuring maximum effectiveness in use of the available resources).

Considering the overall character and quality of the management of academic libraries, both now and as it has been for decades, it is clear that strategic management has been of paramount importance. Growth of collections, as identified by Fremont Rider and as examined by Herman Fussler in terms of the relationship to usage, has been a strategic management issue of continuing importance, one recognized as crucial not only within individual libraries but as a problem of national importance. In that context, the need for cooperation in collection development and management has been handled strategically by the profession, from the days of the Farmington Plan to today's RLG Conspectus. The development of automated systems in academic research libraries was treated as a strategic management problem, leading to the cooperative development of the bibliographic utilities. The preservation of brittle books has been recognized as a strategic management issue. The current crisis in pricing of journals is a clear example of a strategic management issue with which the academic library community is struggling. The effects of new means of publication is another current example.

And these are only a few of the great number of issues that academic library directors have recognized and dealt with strategically. The point is that the academic library community has been among the most effective users of strategic management concepts and methods. It requires only the recognition of what we have been doing and placing it into a general frame of reference.

However, to apply an industrial management approach to academic research libraries requires some necessary changes in definition of such concepts as "product", "market", and performance criteria. The concerns in strategic management -- goals and objectives, administration, constituency and market, sources and resources, competition and cooperation, political, technological, economics, social policy, sources for staff -- all need to be re-interpreted and applied with clear knowledge of the nature of the academic enterprise and of the library within it.

Relationship between UCLA Strategic Management and the CLR Project

It is important to note that at UCLA strategic management and planning within it are facts of campus policy, long embedded in procedures of both campus and library administration. The CLR strategic planning project is therefore at most an ancillary support, a means for providing data that would be of potential value in the ongoing management and planning efforts.

However, it is also important to note that the campus commitment to this kind of management provides a context within which the CLR strategic planning project could be initiated not as an isolated activity but with full commitment of the campus and library administration. The timing in fact was especially fortuitous, given the initiation by the UCLA administration of its campus-wide academic planning efforts about six months after initiation of the CLR project. The result was that the two efforts could be mutually supportive.

A direct result of the combination of activities was the assignment of coordinative responsibilities for information resources on the campus to a Vice Chancellor and the establishment of the position of Assistant Vice Chancellor for Library and Information Service Planning. It institutionalized the entire process of strategic planning represented by the CLR project.

2. THE STRATEGIC PLANNING PROJECT

COMPONENTS

The project, as proposed by Graduate School of Library and Information Science GSLIS, was to be based on six major components:

1) an administrative component, to be responsible for management of all aspects of the Research Program, including the necessary logistical arrangements for the other activities;

2) an Advisory Committee to the administration of the Research Program, starting with members of the UCLA "Committee on the Library of the Future" but augmented with additional faculty and outside representatives, to be responsible both for advice with respect to the overall conduct of the program and for specific concern with those issues relating to the organization and management of information systems and services in the University including the identification of research that may need to be undertaken to resolve those issues;

3) a set of "Disciplinary Task Forces", involving faculty from specific academic areas, to be responsible for identifying the needs for information resources in their areas of interest or, as part of that work, identifying research that may need to be undertaken in order to establish those needs and the related ways in which information resources will be used;

4) a set of study activities, parallel to the Advisory Committee and the faculty task forces, to provide immediate support to their work by obtaining and analyzing currently available data concerning specific issues identified by the Advisory Committee and Disciplinary Task Forces;

5) a set of research projects, to be initiated as a result of the identification of needs for research by the Advisory Committee, the Disciplinary Task Task Forces, and/or the supporting study activities;

6) an active program of communication for the purpose of making the process involved in the work of the Research Program and the results obtained in it widely available, including a newsletter, seminars, conferences, and formal publication of both articles and monographs.

In this structure, the Advisory Committee and the Disciplinary Task Forces were to serve as the primary means for involving faculty from the broad range of University interests; the supporting studies were focussed on meeting the needs in those groups for specific information to carry out their work. The research projects that arose from their work were to reflect gaps in the data immediately available or, it was hoped, specific research issues that were identified by participating faculty as important in their own right.

TIME SCHEDULE & BUDGET

The Research Project was scheduled for four years, starting on 1 January 1986 and lasting until 31 December 1989. The first year, calendar 1986, was focussed on establishment of the administrative organization, the Advisory Committee, the Disciplinary Task Forces, and the supporting study activities. Of those, the first two were virtually already in being, so the principal activities related to the substantive work in establishing Task Forces and supporting studies. More specifically, the first year (1 January through 31 December 1986) were devoted to meetings with deans and faculty committees in each disciplinary area.

At the mid-point of 1986, UCLA served as host for a Research Conference at which representatives of a selected group of other universities joined with UCLA and the CLR in a discussion of the general issues of concern to the Council on Library Resources. As part of the background and content of that Research Conference, UCLA presented the approach taken in this proposal and the results obtained during the first six months. This provide a frame of reference for the other universities to explore similar, though probably different, approaches to the same areas of study.

By the end of 1986 a number of concrete research projects had been defined, to be carried out by faculty in both the substantive disciplines and the Graduate School of Library and Information Science (GSLIS). Those projects served as the focal point for work in subsequent years of the Research Program and in many cases as the basis for proposals to funding agencies. That is, in addition to the research projects funded from the Research Program itself, it was expected that a number of research proposals will lead to funding from other agencies.

In this respect, it is important to note that the funding provided from CLR was minimal in the context of the cost of research projects needed to deal with the problems of concern. It did provide the basis for planning, for definition of research needs, for exploratory investigations and studies, and for initiation of studies, but many research projects themselves needed major funding, with support from other agencies.

Calendar years 1987 through 1989 were to be devoted in part to a continuation of the work of the Disciplinary Task Forces, supported by specific studies, in the same pattern as planned for 1986. Beyond that, though, the major focus was to be on carrying forward work on research projects generated out of the ongoing activities.

The Research Program was funded at a level of $400,000 (total for the four year period). About 20% was budgeted for management, with the remaining 80% committed to substantive work -- supporting studies, research projects, and communications.

ADMINISTRATION

Assigned Responsibility

The administration of the Strategic Planning project be the responsibility of Professor Robert M. Hayes, then Dean of the GSLIS. Support was limited to a part-time secretary.

Actual Results

In the next section, the means for administration was be discussed in detail, but to summarize, the project was administered as proposed, with varying amounts of time committed by Professor Hayes to it. During the first year, about 50% time was spent (Professor Hayes taking a year-long sabbatical for this purpose); during the subsequent three years, the time varied from 20% to 25%, given administrative responsibilities as Dean and teaching workload as a faculty member.

Entering the final two years of the project, Professor Hayes recommended that the administrative responsibility for the project be transferred from the GSLIS to the campus administration, specifically to the Vice Chancellor for Academic Administration. That was effected, followed shortly by the creation of a new position -- Assistant Vice Chancellor for Library and Information Services Planning -- to be subsequently filled by former University Librarian Russell Shank.

Assessment

It is evident that assignment of responsibility for administration of a major planning effort to a faculty member or a dean is not appropriate. Given the scope of the tasks and the centrality of the responsibility to campus and library administration, it should be vested in a full-time, continuing position. Otherwise, the pressures of other, primary administrative tasks and/or teaching and individual research take precedence. Furthermore, it is only with the imprimatur of identified administrative responsibility that there is any basis for persuasion of faculty and other administrators that the work is of campus importance.

Fortunately, the planning responsibility was institutionalized in the creation of the position of Assistant Vice Chancellor for Library and Information Services Planning so that future activities will carry the weight of that position.

ADVISORY COMMITTEE

Membership

Central to the Advisory Committee were the members of the UCLA ad hoc Committee on the Library of the Future. Therefore, Executive Vice Chancellor Schaefer wrote to them asking them to serve -- as persons and not as part of their responsibilities on the ad hoc campus Committee. Other faculty were added to the Advisory Committee so as to assure that the objectives of extensive involvement of faculty in the project would be met. To that end, Executive Vice Chancellor Schaefer wrote the Chair of the Academic Senate, requesting nomination of faculty to serve; from the list of nominees, three were selected.

In much the same vein, it became evident, through discussion with the librarian community on campus, that added representation of librarians on the Advisory Committee is essential. To that end, Executive Vice Chancellor Schaefer wrote a letter to the Chairman of the UCLA Librarians' Association of the University of California, and two librarians were subsequently appointed.

Proposed Role

The Advisory Committee was to serve two purposes. First was indeed that of providing general advice and guidance to the project. The second was to provide the means for review and recommendation with respect to funding of research proposals arising from the project.

Actual Results

During the first year and a half, those purposes were well served. Indeed, the assistance of the Advisory Committee was crucial in dealing with the problems, as will be recounted in a moment, in gaining wide-scale faculty involvement; they were also crucial in reviewing the proposals for substantial investigations at the Disciplinary Task Force level that were initiated during that 18 month period. However, during the remaining two and a half years, the Advisory Committee did not play a significant role.

Assessment

It is evident that an Advisory Committee of administrators, faculty, and information professionals brought together review and recommend is crucial to a planning effort for information resources in any university. It is consistent with patterns of university administration as well as with the substantive needs in assuring broad input. That was clearly demonstrated in the first eighteen months of the Strategic Planning project.

DISCIPLINARY TASK FORCES

Proposed Role

The Disciplinary Task Forces were to constitute the core of the Research Program, providing the means both for gaining faculty involvement and for learning what academic needs are or the means by which they may be determined.

The major effort during the first year of the project was indeed devoted to establishing the several Working Groups. The means for doing so was to meet with each of the deans on the campus, both in the Divisions of the College of Letters and Science and in the several professional schools. Each was asked to appoint a number of faculty to serve and, if possible, to involve appropriate staff from the library or other information activities of importance. It should be mentioned that the reception was universally positive. Each dean expressed the view that the objectives of the project were consistent with their own concerns in strategic planning. Subsequently, meetings were held with each of the faculty Disciplinary Task Forces as they were established.

Each Disciplinary Task Force was asked to deal with the following types of questions, with specific attention to each area of academic program:

1) What are the current and expected future needs for information resources ?

2) What are the current and expected future changes in publication and distribution of information?

3) What are the different media of importance, both currently and as expected in the future?

4) What role do the different media play in research, scholarship, and education?

5) How do faculty and students use information resources and how will they do so in the future?

6) What are the means used for access to and use of information resources?

These questions were intended to be representative, not complete or prescriptive. It was felt that some of them could be answered from the knowledge of the members of the Disciplinary Task Forces or their colleagues; some of them might require supporting studies which could be funded within the framework of the Strategic Planning project; some, though, it was expected would require the formulation of a research proposal for consideration as a formal project, funded either by the Strategic Planning project or by an external agency.

The Task Forces were to try to consider the "20-year context" for the following issues:

- o The future needs for library and other information support in the specific academic program area
- o The future of publication & communication in that area
- o The future role of the library and its collection
- o The future of computers, communication, and other technology
- o The future for information personnel
- o The future for facilities and equipment
- o The future for economic resources

And within that 20-year context, the Task Forces were asked to consider the following specific concerns for the coming 5-year period:

- o Collection development, management, and organization
- o Facilities and automation development
- o Financial requirements

Actual Results

It must be said that in only a few cases were the Disciplinary Task Forces effective and even in those few cases it was because of the efforts of single individual faculty or of the librarians and other information professionals. To be specific, the Disciplinary Task Force in the Anderson Graduate School of Management led to the study of integration of libraries, computing, and telecommunications in the design of the new AGSM building was undertaken by the director of the AGSM computing facility and the AGSM librarian. The one in the School of Architecture and Urban Planning led to the study of the needs for information resources for that School by a faculty member. The one in the School of Medicine, was especially effective as a part of that School's overall effort at strategic planning and the Biomedical Librarian played a central role in that planning effort.

But those were the only cases in which there was effective result from the Disciplinary Task Forces.

Assessment

It must be said that, in proposing this approach, there were high hopes for it as a means to gain faculty involvement in a strategic planning process. The lack of effectiveness reflects the reality of academic life. Faculty must focus their attention on their specific teaching responsibilities and on their own, self-identified areas of research. Issues of importance to campus administration, to management of libraries and computing facilities, and to long-range planning for information resources are regarded by most faculty as "part of the woodwork". It is only when they experience personal problems that they will want to devote attention to the perceived cause of them.

I think this problem of involving faculty in activities that librarians and administrators may perceive them as vitally important is not unique to UCLA. Just to illustrate: Among the projects I will identify was one concerned with the impact of "copyright policies" on faculty interests. That study obtained copies of about 150 policy statements from both librarians and administrators of about 100 major universities, and analyzed them in terms of

relative restrictiveness and the means for formulation. Of them, only six had directly involved faculty in their formulation!

Speaking as a former dean, I must in retrospect say that I should not have been so naive. I already had ample evidence of the fact that faculty will focus their attention on their own responsibilities, and rightly so.

SUPPORTING STUDIES

Proposed Role

It was expected that, in cases in which an ad hoc study might be able to serve the needs of the Advisory Committee or a Disciplinary Task Force, the Strategic Planning project would establish a supporting study, with graduate students as Research Assistants working under the direction of faculty of the University carrying forward the study. Some studies may involve staff of the University Library System; some staff from the Office of Academic Computing; some staff from other facilities responsible for archives of various kinds.

A supporting study was expected to involve assembly of a bibliography or of relevant data, a statistical analysis of available data, a brief survey (such as a polling of faculty with respect to a question). It might involve writing to external sources to obtain data that is available from them. It might involve a brief experiment to determine the effectiveness of some tool. It might involve preparation of a position paper, with identification and evaluation of alternatives. It might involve an analysis of transaction data from online catalog operations.

The point is that a supporting study was expected to be brief in time, limited in scope, based on readily available data (frequently on data that are published). It should be within the capability of graduate Research Assistants, working under suitable faculty direction.

Actual Results

Two categories of Supporting Study were ultimately identified: generic studies and specific studies. The first category included studies that appeared to have wide applicability across the campus; the second included those that were specific to particular disciplines.

The generic supporting studies included: 1) a survey of scholarly and professional publishers for the purpose of determining their current plans and future expectations with respect to publication in CD-ROM (i.e., "compact disk, read-only memory") formats. This development clearly affects disciplines across the entire campus. 2) a review of the impact of copyright and contractual limits on the scholarly use of information resources. This involved identifying the administrative policies implemented by various universities to deal with constraints on the ability of faculty to use such resources.

There were no supporting studies generated as a result of the needs of the Disciplinary Task Forces, even though it was expected that, as the Disciplinary

Task Forces began their own work, a number of specific supporting studies would be requested and initiated.

Assessment

Supporting studies have value in the context of the central administration of a planning effort, not in a dispersed responsibility.

RESEARCH PROJECTS

Proposed Role

The development of research projects under the direction of faculty and/or librarians or other information professionals at UCLA was one of the primary objectives of the project. This reflected the hope that there would be identification of problems of substantial interest to faculty from a variety of disciplines.

Because the funds directly available from the project budget were limited, it was expected that they would be used for relatively small projects or for the pilot phases of larger projects (as preparation for proposals to other funding sources).

It was expected that proposals would grow out of the work of the several Disciplinary Task Forces or from discussions with individual faculty and/or information professionals on campus. It was felt that other proposals might result from the need for pilot studies to develop projects in response to opportunities provided by other funding agencies.

Actual Results

As the lack of effectiveness of the Disciplinary Task Forces as a means for conduct of the planning process became evident, the Advisory Committee recommended that direct approach be made to the campus-wide faculty. Based on that recommendation, two direct mailings were made to every member of the faculty of the campus. Each of them identified the objectives of the project and announced the availability of funds to support individual investigations. Two levels of funding were described: small projects (on the order of $1500), suitable for a graduate student working under faculty direction, and larger projects (on the order of $15,000 to $30,000), involving major efforts by the faculty member(s) involved. Based on CLR policies, expenditures were not generally allowed for purchase of equipment, for travel, or for augmentation of faculty salaries; they were allowed for graduate student support and for expenses involved in conduct of investigations.

The result was submission, during an eighteen month period, of about forty proposals, most of which were approved. They will be summarized in the next section of this report.

Assessment

It should be said that these efforts were not "cutting edge" studies as far as advancing our knowledge of information technologies, information services, or librarianship is concerned. They were all very pragmatic, current, and immediate. This does not diminish their importance, though; instead it highlights the necessity of distinguishing between the perceptions of the information professionals and those of the faculty as users.

This is a valuable and effective means for determining from faculty what their real needs are. It is relatively inexpensive, especially if most of the efforts are in the "small project" funding range, but it does provide concrete evidence of needs. Furthermore, it can be very effective in generating proposals for funding from external agencies.

COMMUNICATIONS

Proposed Role

A central objective of the project was to communicate both the process and the results in ways that will assist the university community at large in determining how to proceed with this kind of strategic planning. To that end, a variety of means for communication were implemented.

Actual Results

A publicity release was distributed to appropriate media, professional and general. A copy is appended to this section of the Progress Report together with a copy of the notice that appeared in American Libraries as a result. It is important to note that already there have been letters to the project resulting from this publicity and expressing interest in the project. Another form of general publicity is represented by the newsnotes in the Library Newsletter/UCLA".

A different form of general publicity was be provided by opportunities for formal talks to be given in various professional contexts. These included presentations to the OCLC Academic Libraries Advisory Committee, to IFLA, to a number of professional library meetings, to librarians in academic libraries, to faculty of library schools; perhaps thirty such talks were given during the past four years. Generally, the title of the talk was:

> "Strategic Planning for Information Resources in the Research University: A Report on a Project and its Implications"

Every effort was made to communicate the nature and purpose of the project throughout the UCLA campus community, both academic and professional. Presentations were made to the UCLA Academic Senate Library Committee, to the ad hoc Committee on the Library of the Future, to the Office of Academic Computing, to UCLA LAUC, to the faculty and information professionals concerned with the several "media archives", to the faculty and staff in specific areas of instruction, to groups of faculty identified by each dean.

The GSLIS has a continuing program of colloquia and other formal talks presented by distinguished academics and professionals. Some of these were closely related to the objectives of the project. To be specific: colloquia were presented by Visiting Professor Donald Lamberton, from Australia, on "Information Economics"; a colloquium was presented by Michael Rogers Rubin, of the U.S. Department of Commerce, on "Information Economics and Information Policy"; a colloquium was presented by Dr. Edward Huth, editor of the Journal of Internal Medicine, on the topic "Electronic Publication".

There was a conference in early September 1986 for the purpose of discussion among a few interested universities on possible approaches to long range, strategic planning for information resources in the research university. The UCLA project was be used as an example, but the primary purpose was to gain the benefit of general discussion. A second conference was held in Summer 1988 involving about 40 of the UCLA/CLR Senior Fellows in a three day examination of alternative scenarios for strategic planning for the future of academic libraries.

A Newsletter was distributed twice, as part of the effort to gain the participation of individual faculty.

3. MANAGEMENT OF THE CLR PROJECT

The CLR sponsored project indeed has been carried forward as a campus effort, though administratively centered in the Graduate School of Library and Information Science. It has involved the University administration at the level of Vice Chancellors (for Academic Affairs and for Research); it has involved the University Library at the levels of University Librarian (Russell Shank and, now, Gloria Werner), Associate University Librarians, and major unit heads. It led to creation of the new position of Assistant Vice Chancellor for Library and Information Services Planning.

The actual administrative responsibility for the CLR project, however, was centered in Professor Robert M. Hayes, who served as Principal Investigator. The management staff was minimal -- one part-time administrative assistant -- so the overhead costs for administration were minimal. Administration involved two component efforts: overall management and management of project studies.

It is important to reiterate that the CLR project was not the means for conduct of the campus program in strategic management and planning. In fact, campus and library planning continued as they had in the past, as conscious active efforts. The project in that respect was merely ancillary, providing a means by which specific studies relating to overall planning could be initiated without complicating ongoing campus planning activities.

TIME SCHEDULE & BUDGET

The project was scheduled for a four-year period -- January 1986 through December 1989. The budget was $400,000, but actual expenditures were about $280,000 (substantially less than budgeted), as will be detailed in Section 5 of this Final Report, primarily as a result of the lack of progress for most of the Disciplinary Task Forces.

For any university intending to initiate a formal strategic planning process of this kind, the yearly budget will certainly be substantially greater than the actual expenditures or even perhaps the initial budget. First, the responsible manager's salary (including benefits), even if limited to 50% time, is likely to be at least $50,000; clerical support should be full-time, not part-time, so about another $20,000 should be budgeted; for a four-year effort, together they equal the actual total expenditures of this experimental project. Second, the approach of funding faculty investigations is a valuable one; an annual budget of perhaps $50,000 for that purpose would permit on the order of ten such investigations per year, one at a $25,000 level and the remainder at about $2500. In other words, a budget of $120,000 per year seems

to be the least that should be budgeted for such an effort.

MANAGEMENT OF SUB-PROJECTS

The CLR Project was carried out through a large number of individual studies, each the responsibility of a faculty member of the University or a professional librarian. Specific sub-projects will be reviewed in Section 4, along with other sources of data for assessment of information resource needs of academic programs.

The projects fell into two categories: small (with funding on the order of $1500 to $3000) and large (with funding on the order of $15,000 to $30,000). The former were approved based on simple proposals -- a letter or a one ot two page description; approval of them was made at the discretion of the Principal Investigator. The latter were approved on the basis of a more extensive, but still fairly limited, proposal; they were reviewed by a sub-committee of the Advisory Committee and then approval was based on their recommendation and the discretion of the Principal Investigator.

Conduct of any project, including the mechanisms for reporting results, was treated as the responsibility of the faculty member or librarian conducting the study. Financial accounting was handled either by transfer of funds, in the amount approved for the project, or by the administrative offices of the Principal Investigator. (Most of the accounting was handled by transfer of funds, in order to reduce the bureaucratic burden.)

It was the hope that sub-projects might lead to the development of proposals for much larger levels of funding from other agencies. That turned out to be the case in at least the following sub-projects:

- The project with the School of Engineering, in the area of information needs for research on Hazardous Substances, led to inclusion of an information center as part of the proposal to the National Science Foundation; that large program was subsequently funded by NSF, including explicit funding for the information center.

- The project with the Center for Medieval and Renaissance Studies, concerned with the information resource needs of the potential program for preparation of the Repertorium Columbianum, was an integral part of the work in preparing the proposal to the National Endowment for the Humanities for support of that project; the work for the first set of volumes, including the information support tools, was funded by NEH.

- The project with the Anderson Graduate School of Management, concerned with means for integrating the library, computer facility, and telecommunications of AGSM became a central component of the architectural planning for the new AGSM building.

- The project with the Center for African Studies, concerned with development of a bibliography in the area of politics, led to a proposal for funding of that effort by the Defense Intelligence Agency; that project was funded.

- The project within the Graduate School for Library and Information Science, concerned with the need for materials to instruct Latin American librarians in the use of microcomputers, was funded by Unesco.

- The project within the Graduate School for Library and Information Science, concerned with university and academic library copyright policies, was incorporated in a project of the Association of Research Libraries. It also led to creation of an administrative committee at UCLA to review Federal activities is such areas.

The preparation of proposals for such major funding was certainly one of the major benefits of the overall project.

PROJECT DATA FILES

In the UCLA Strategic Planning project, it was necessary to establish a number of data files that served as means to control the exceptionally wide range of activities involved.

Persons

The data file on Persons served both as means for management of the project, for identifying the roles of individuals, and for communication with them. Each record in the file included data for Name, Title, Address, Telephone number, and links to all other files (Academic Programs, Facilities, Projects, and External Environment). The linkages to other files, in a relational database structure, permit bringing together relevant data for each person that is contained in them, without redundancy or inconsistency.

Academic Programs

The purpose of the Academic Programs data file is to provide means for identifying individual units (schools and departments, organized research units, and others). Each record included data for Name, Responsibility, Budget, Staff). Links with the other data files (Facilities, Projects, Persons, and External Environment) again permit bringing together relevant data; of special importance is the linkages to the Persons file, in the identification of the responsible manager.

Facilities

The purpose of the Facilities data file is to provide means for identifying the several information facilities (Libraries, Computers, Media centers, Archives, and Other kinds); for each of them, recognition of system, department, and other categories was provided for. The records in this file

identified the Name of the facilitiy, the responsible person (by linkage to the Persons file), budget, staff. Linkages to the other data files (Persons, Academic Programs, Projects, and External Environments) provided means for relating relevant data.

Projects

The Projects data file was the most central for management purposes, given the methodology used. Its purpose was to provide for means of identifying relevant research projects, wherever they may have been arried out, and tie-in of Principal Investigators or possible Researchers of the sub-projects of this particular Strategic Planning project; it also provided means for distribution of communications. Each record identified the project by Name and identified the Responsible Person (linking to the Persons file), the assigned budget, and related staff (again by linkage to the Persons file). Some records in this file were specific to sub-projects within this Project (both supporting studies and research efforts); others related to projects funded elsewhere. Of course, links to the other files (Persons, Facilities, Academic Programs, and External Environment) provide means for relating relevant data.

At a very early stage in the Strategic Planning project, data were obtained from the UCLA Office of Contracts and Grants for all funded projects on the campus that related to information needs. Of the some 2500 total grants to UCLA, over 10% were either generating information files (in the specific sense, not in some generalized sense) or were acquiring them for purposes of analysis. The funding of that 10% or more was an even greater percentage of the total external contract and grant funding.

External Environment

The data file on the External Environment has the purpose to tie-in data about relevant literature, technological forecasting, political and societal forces, the status of publishing, etc. The records provide both bibliographic references, and technical details. Again, links to the other files provide means for relating relevant data.

4. SPECIFIC RESULTS

INTERNAL TOP MANAGEMENT CONCERNS

Administrative Structure

A paramount strategic concern is the administrative structure for information resource management. Does the campus establish a "czar" for information, with operating responsibility for the entire set of resources and facilities? Does the campus subsume the computing facility under library management, or vice versa? Does one merge film archives or data archives into the library? Does one assign responsibility for management of the media center to the university library?

There are good arguments for any of these alternatives or perhaps others. For example, establishing an information czar would be consistent with the view that information resources are essentially substitutable for each other. Placing computing and libraries under one manager makes great sense if the perception is that electronic means for information distribution will become the dominant form in the future. Merging various kinds of libraries and archives makes sense if one looks only at the similarities among media.

The arguments for distributed management, leaving aside the issue of management style which we will examine in a moment, seem exceptionally persuasive. First, the different kinds of information resources require different kinds of management and technical expertise; there is no reason, in principle, to expect that one person will be sufficiently expert in each of them. Second, most information facilities, the library and the computing facility among them, are already major bureaucracies; there is no reason to expect that there would be returns to scale in combining them. Third, most of the information resoucres are closely tied to specific academic programs; the political and operational problems that would be created by combining them in some overall agency far outway the advantages to be gained from doing so. Fourth, the acquisition budget of the library must be carefully protected from a wide range of forces that would dissipate it; if the library were to be combined with data archives, film archives, media centers, and the wide range of other resource acquiring agencies, the result would be a dramatic increase in those pressures.

The facts, though, are that administrative structures reflect the style of the institution rather than the logic of similarities. Where the style is hierarchical, with strong lines of authority, one might expect to find a

information czar. But where the style is for distributed decision making, one would expect to find independent administrative units working within a coordinated, cooperative framework.

At UCLA, the style is for delegation, for distributed responsibility in decision making with the requisite authority. The result is that the several information agencies on campus function either as independent administrative agencies or under the management of the relevant academic unit, school, college, or department. In such a distributed style of management, coordination is important, of course, so the Academic Vice Chancellor has been assigned that responsibility, together with the Assistant Vice Chancellor for Library and Information Services Planning. Each of these assignments has been made within the past two years, reflecting the recognition that planning must be institutionalized at the highest level of administration.

Personnel Policies

Another concern of campus administration should be appropriate personnel policies. There is need to assure equity across the range of information professionals -- librarians, media specialists, computer staff, archivists of every kind. The need is especially acute in a decentralized administration, since independent units may otherwise make appointments and promotions that meet the needs of the local unit but are at odds with overall equity and even with real needs in performance.

Generally, the standards for professional librarians in this respect are quite well established and effectively applied. But in most universities there are no comparable policies for other categories of information professional. This is an area of administration that needs to be carefully examined in every institution.

Paramount among management concerns is the relationship to campus strategic planning and the role of information resources in it. To what extent do the objectives of the institution and of the units within it depend upon each kind of information resource? What are the needs of the constituencies to be served by the information resources? Normally, in market analyses, one is concerned with stimulating or creating demand, with renewal and revitalization of demand. In the academic environment, though, the objective is to identify the needs in specific areas of academic responsibility: instruction, research, public service, and service to local industry. Indeed, the faculty needs, in instruction and research, were the primary concern of the CLR project. Of special interest were the effects of changes in the process of teaching and research, changes in the process of disciplinary communication, and the needs for new forms of information. It is these issues that were the primary concern of the CLR project at UCLA; they will be summarized in later sub-sections.

EXTERNAL TOP MANAGEMENT CONCERNS

We turn now to the other crucial component of strategic management: knowing where the organization is with respect to both its external environment. Just as with the internal audit, the external one must be a continuing, ongoing process, not a one time assessment. As before, in this

chapter we will focus on the aspects of an external audit most specific to the management of information resources -- the needs of academic programs -- with concentration of those that were foci of the Strategic Planning project at UCLA. However, for completeness in discussing strategic management, there is value in including the entire range of concerns in an external audit rather than just those to which the attention of the CLR project was directed.

Before turning to details of the CLR project efforts, though, there may be value in reviewing some of the aspects of generic importance in profiling the environment: identifying characteristics of each element of the environment, identifying and assessing its political positions and determining the effects it has on strategic planning for the university and the library within it.

In the following sections, we will describe the environment for strategic planning for information resources in the research university in the following categories: 1) publishing; 2) political/social policy/legislative/legal; 3) cooperative programs; 4)technological; 5) fundamental research issues in library and information science.

Each of these environmental elements is to some extent supportive of the interests of the university and research library, but each of the first four is also to some extent resistant to those interests. As we discuss each of them, we will try to provide an assessment for each element of its supportive and resistive positions. We will try to assess the nature of its effects on planning, and the degree of certainty and the degree of importance that can be attributed to those effects

Publishing

While the role of the publishers may appear to be self-evident, it is important to recognize that publishing is the primary source of information resources. Of paramount importance is the dependence of the library on the decisions made by publishers about what will be published and about its format. In a later sub-section, we will comment specifically on the implications for print publishing.

Other Media. The library community has been at the forefront in development of new formats, with the experiments by the Library of Congress, the National Library of Medicine, and the National Agricultural Library as specific examples. TTo explore that, a CLR sub-project was conducted early in 1986 on CD-ROM publication. It revealed that three years ago, in 1986, about 75% of CD-ROM publications were specific to library operations (i.e., abstracts and bibliograsphic data files); in 1988, it was 60%; it is estimated that by 1990 it will be less than 40% (according to a ComputerWorld report on 5 June 1989). Text files and raw reference data (such as pricing and financial data) are rapidly becoming the dominating kinds of content.

The federal government is moving rapidly into this form of publication. For example, the Defense Mapping Agency is mastering 6 disks per day; it will publish 860 CD-ROM titles in 1989/90. The Defense Logistics Agency is publishing hazardous materials information in CD-ROM format; the U.S. Patent and Trademark Abstracts will be distributed to Patent Depository Libraries six

times per year in CD-ROM format.

The implications are clear: Optical media promise to become significant means for publication of materials important to academic functions. The pace of growth needs to be continuously determined, and this study provides a starting point for doing so. The range of disciplines shown in the study presents some issues of tactical importance in planning for acquisitions, equipment support, training and other operational support. There are also some implications for the design and use of workstations.

Still, though, the mainstream publishers of books and journals are moving into this form of publication very slowly, very cautiously. That means that there is much uncertainty about when, or even whether, library materials will be available in this form.

Pricing Policies. The CLR project did not consider any of the effects of the pricing policies of publishers, but they have such critical importance to strategic planning that we must make note of them. The massive rates of inflation experience in the price of journals, especially foreign commercial journals in the physical and biological science, has produced a catastrophic situaltion for every major research library of the country. The explosive situation has resulted even in a court case -- "Journal publisher sues author of price study" (American Libraries, September 1989, pp 717-718) -- as at least one publisher has tried to counter reports that profits of publishers increased at exorbitant rates.

The implications of this for strategic planning are multiple. They get to the heart of allocation of resources among academic programs, as commitments of acquisition budgets to journals of value to the sciences force reductions in purchases of the monographs of value to the humanities. Furthermore, the nature of serial publications is that represent commitments not just for today but for the foreseeable future.

Political/Social Policy/Legislative/Legal

In areas such as copyright, federal policies on access to governmental information, privatization of governmental functions, the actions of Congress and the President create the environment within which academic responsibilities must be arried out.

Campus Committee on Federal Communication. In the course of the project, several issues were identified that related primarily to factors outside the University itself and yet which have dramatic effect upon the ability of faculty and information professional to use information resources effectively in carrying out the University's responsibilities. These external factors need to be identified and means created by which the University's needs and obligations can be recognized in the political processes that lead to policy decisions at a national and state level. Recognition was been given in the UCLA administration of the need for UCLA to establish means for such strategic planning, with the establishment of an administrative committee.

Copyright. Intellectual property rights are of two-fold importance to the academic community -- as owners and as users of copyrighted material. The development of policies to deal with those rights is a matter of current concern in universities throughout the country.

A CLR sub-project determined the policies of major universities with respect to copyright. A survey was sent to all Association of Research Libraries (ARL) and AAU institutions, to both the library and the university's legal counsel. Replies were received from all but two of those institutions and, in most cases, from both the library and the counsel. The results became the basis for a SPEC Kit distributed by the Association of Research Libraries. The sub-project was, to some extent, triggered by the effects of a University of California system-wide policy greatly restricting off-air taping of audio and video broadcasts. The question was whether such policies adequately reflected the needs and responsibilities of the academic enterprise, on the needs for information and the effects of copyright policies on academic research and teaching. As I have indicated one of the revealing facts was the minimal role played by faculty in the formulation of these policies, despite the crucial effect they have on teaching and research.

Access to Information. During the past decade, the policies of the Executive branch of the federal government have been to reduce access to and availability of information of virtually every kind -- from scientific and technical to economic and demographic. The effects on libraries and other information organizations have been so severe that the professional associations have felt forced to take stands on access to information". The Information Industry Association, the Medical Library Association, the Association of Law Libraries, the Association of Research libraries -- each has come out with official policy statements of concern about federal restrictions. The restrictive policies affect not only the information provided but they stifle scholarship. The Handbook of Labor Statistics, International Economic Indicators, Federal Statistical Directory, Vital Statistics of US, American Education, electronic databases -- all have been affected. Beyond that have been conscious efforts at control of information, film censorship, and even efforts at dis-information (lying). It has been characterized as "less access to less information by and about the U.S. government" by the ALA.

At the same time, the commercialization and privatization of government information has led to other means of control, as federal agencies have pressed data-base firms to curb access to "sensitive" information.

A CLR sub-project in the Graduate School of Library and Information Science was focused on the effects of limits placed on academic access to information resources. It led to the establishment of a First Amendment Information Resources center. The view was that of all external policies, those that deliberately restrict the scope and freedom of inquiry are the ones that strike at the very heart of the academic enterprise. It is essential that there be complete awareness of those kinds of political, social, and judicial restraints. The sub-project established means for maintenance of files that will document the facts about restrictive policies.

Cooperative Programs

The library community has a long tradition of cooperation. It is represented by interlibrary loan, by the development of cooperative cataloging through the Library of Congress and the bibliographic utilities (OCLC and RLIN), the Center for Research Libraries depository center, the preservation program, and a wide range of consortia and networks.

These cooperative enterprises have value, as represented by the sharing of resources through interlibrary loan, but they also have costs, both financial and in loss of institutional prerogatives.

There were no CLR sub-projects concerned with any aspect of cooperation.

Technological

It hardly seems necessary at this point to comment on the role of information technologies in modern information distribution. They pervade every aspect of library operations and services; computer facilties embody them; other kinds of information facilities either use them or represent them.

In the same vein, the implications of the information technologies for strategic planning have dominated this report. There is need to consider the changes occuring with computers, as they become every more capable, smaller, yet less expensive. The changes occurring in data storage, in data input and output, in data communication -- all need to be considered.

There were no CLR sub-project that specifically considered the technological environment; no specific effort was taken to predict or even to speculate on the direction or pace of future development.

NEEDS FOR PRINT PUBLICATIONS: BOOKS, JOURNALS, MANUSCRIPTS

Information Need

An issue of current debate is whether print form publications will continue to be viable and important means for information distribution. Some have claimed that we will become a "paperless society", with electronic means for communication replacing print. Others have pointed to the fact that the effect of the computer, of FAX, and of other new media has been to increase the role of paper not diminish it.

There was no explicit CLR sub-project that answered this question. But, as we will detail, the implications are clear, unequivocal, and direct: Print is still an essential medium for scholarship and scholarly communication.

It is also evident that the information technologies and the new media must be considered in planning, not only in their own right but as essential adjuncts and supplements to the printed formats.

Implications for Strategic Planning

The implications for strategic planning lie in virtually every area: Collection development policies must still deal with print media as the major commitment of acquisition budgets. Resources must still be committed to buildings. The qualifications of professional staff must still emphasize knowledge of print materials. There is need for equipment to relate print media with computer-based media.

It is important that we establish some basis for projecting the likely rate of print publication and of library acquisitions of them. Historically, as shown in the study by Fremont Rider in 1944 and by Purdue studies by Oliver Dunn and Keith Dowden starting in 1965, the collections of major academic libraries had for well over 100 years increased at exponential rates, doubling within fifteen to twenty years. Will that continue to be the case? Well, a more recent update by Warren Seibert of the NLM suggests not. In fact, it shows that for the past twenty years that historic trend has changed dramatically. We have seen virtually a "steady-state" in the rate of addition for medium to large ARL libraries (ranging from 100K to 150K volumes per year), and an actual decline in the rate of addition for the smaller ARL (steading going down from about 80K to about 60K volumes per year). The decline for the small libraries can be directly attributed to the effects of network sharing of resources, with the smaller libraries depending upon the larger for guaranteed access.

To what can we attribute this change from historic patterns, and is it likely to continue? There are at least six possible explanations, with the likelihood being that all of them are operative. First, rates of inflation in academic acquisition costs have been substantially greater than the average augmentation of the acquisition budgets; that forces a reduced rate of accession. Second, many large institutions stopped construction of library buildings for that twenty year period; that probably forced librarians to be much more limited in their acquisition policies. Third, the great period in which collections were available to be acquired, which made it possible easily to increase the size of collections, seems to have ended; that means it is much more difficult to sustain rates of increase. Fourth, the increased dependence on sharing of resources, which served to drive so many of the technological and organizational developments of the past twenty years, has reduced the dependence on local resources, especially for the smaller institutions. Fifth, the effects of new, technological means for access has led some libraries to use the acquisition budget to fund the costs of these newer means for information access, with the view that they substitute for the neede for collection development; that clearly reduces the funds available. Sixth, there were significant changes in political policy which reduced the availability of publications, such as those from government sources.

The pattern of the past twenty years appears likely to continue for the coming decade at least and probably for the coming twenty. We will see steady-state levels of acquisition by all academic libraries -- at 150K for large libraries, 100K for medium, and 60K for small. It is possible that increasing rates of publication from foreign countries, especially developing ones, may change that picture, but probably not for the coming ten years at least.

CLR Sub-projects and Other Relevant Activities

What evidence did the CLR project at UCLA develop in response to this issue? It must be repeated that none of the projects explicitly considered the question; answers to it must therefore be derived by implications rather than direct evidence. Here we will list the sub-projects in the CLR project at UCLA that to one extent or another relate to this issue and discuss the evidence from each that bears on this question: the Bibliography of African Studies, Rarely Taught Languages, the Repertorium Columbianum, Hazardous Substance Research, Preservation.

Bibliography of African Studies. This sub-project was concerned with development of computer based methods for producing the newest edition of a Bibliography for the Study of African Politics. More generally, though, it provided an illustration of a serious problem for researchers concerned with area studies -- the difficulty in getting access to materials from the countries of the developing world. The entire substantive focus of the bibliography is on print materials; there are no other media of current significance to it, though in the future other media may become important.

The crucial point with respect to the role of print as a medium for scholarly research and communication is that it is still essential. The source materials covered by the bibliography are in print and for the foreseeable future will continue to be so.

A second relevant point is that new means for information distribution are also represented by this project, but in support roles. Specifically, the main focus of the CLR funded effort (which led to a proposal for a separately funded program) was on application of computer-based methods to the production and distribution of the database for the bibliography. A standard database language was used; data storage eventually was on WORM equipment, funded by the separate project; the campus ORION system served as a major source of bibliographic data (about print sources); the CD-ROM from Dissertation Abstracts served as a source of data about those print and microform publications.

Rarely Taught Languages. This project was concerned with means for obtaining access to materials from foreign countries needed to support instruction in rarely taught languages. While the full range of media, including video and audio tapes, was of concern, the major focus was on print materials.

Repertorium Columbianum. Throughout the Repertorium Columbianum project (to be described later), the entire substantive focus is on print materials: The sources for translation are in paper form, either print or manuscript; the final product was to be in print form.

Computer based methods for information handling played a critical role in the project, and were the focus of concern in the CLR sub-project, in fact, as we will discuss later. But the implication is clear: print and paper based records are crucial to this project.

Hazardous Substance Research. This project was concerned with development of an information center in support of Hazardous Substance Research. While a full range of information sources was to be included -- from computer databases to image files -- the primary concern was with printed journals, reports, and books.

Preservation. A pair of related projects, funded by the CLR, examined the magnitude of the problem of brittle books, the alternative means for solution of it and the related costs, and the benefits to be derived from ensuring continued access to them and their contents. The evidence from the examination of benefits was clear and unequivocal: preservation of these print materials is crucial to research throughout the university, from the humanities and fine arts to the sciences.

Among the alternative means examined by one of the related projects was the use of digitized images. Again, the new technologies serve as supplements to the print, as means for dealing with specific problems but not as replacements.

INTEGRATION OF LIBRARY/COMPUTER/TELECOMMUNICATIONS

Information Need

It is evident that libraries, computing facilities, and telecommunications must be integrated with each other. While that does not require or even imply single point management for them, it does require that they each function with conscious awareness of the others. It does require that their parallel development be coordinated. It does require that policies be established that will encourage effective cooperation.

Implications for Strategic Planning

The strategic significance of three projects at UCLA is great. They each represented, in a microcosm, the comparable larger scale problems for the university as a whole. They each raised, and resolved, important issues related to organization (How does one bring together resources that have divergent administrative reporting paths?), to facilities (How does one plan buildings and space around coordinated information resources?), to staffing (How does one manage a diverse array of information professionals in a coordinated set of services?).

CLR Sub-Projects and other Relevant Activities

Several of the CLR sub-projects and other relevant activities, especially those initiated by professional schools, were concerned with integrating the range of information facilities and resources specific to their interests. Three such studies are of special significance: The Anderson Graduate School of Management, the School of Medicine, and the School of Architecture and Urban Planning.

Anderson Graduate School of Management. A small supporting study was initiated as a cooperative effort of the Strategic Planning Project and the

Anderson Graduate School of Management; it led to a formal proposal for a larger scale research project. The objective was to identify the needs of faculty and students of the GSM for an integrated information facility, combining library, computing, and telecommunications.

This study effort then related directly to the planning process for the new building for the AGSM; it involved solution of tactical issues in relating the library, the computer, and the telecommunications network of the GSM to the design of that building and to the needs of faculty and students.

School of Architecture and Urban Planning. This sub-project was focused on the information resources needed to support teaching and research in the fields of architecture and urban planning. It represents a number of issues of strategic importance -- integration of computer facilities and libraries with academic programs, special needs for graphics and computer processing, special ties with community professionals.

Medicine. The strategic planning effort within the School of Medicine was carried out quite independent of the CLR project, without any identifiable contribution from it (except as might have been involved in sub-projects to be described later). However, the implications of that effort are still relevant for the objectives of the CLR project. It dealt primarily with the academic programs of the School of Medicine, but the role of the Bio-Medical library, support to computer use, and telecommunications were explicitly recognized.

INTER-INSTITUTIONAL COOPERATION

Information Need

Much of academic research today involves cooperation among multiple institutions. This creates special demands for information support, in communication, in the use of shared databases, in access to common library materials.

Implications for Strategic Planning

Inter-institutional cooperation implies commitment of resources and, to a significant degree, loss of independence. It also implies basing some of one's own institutional long-range planning on expectations that others will fulfill their responsibilities. An issue, therefore, is the extent to which the individual institution should support the National Research Network.

CLR Sub-projects and Other Relevant Activities

Several CLR sub-projects related directly to this kind of information need: The Repertorium Columbianum project of the Center for Medieval and Renaissance Studies, programs of the Center for Latin American Studies, and programs for Training Foreign Librarians.

Center for Medieval and Renaissance Studies.. A sub-project within the Center for Medieval and Renaissance Studies was focused on the needs for information resources to support development of the Repertorium Columbianum. A

supporting study was initiated, involving a graduate student in the Center, to examine those needs. The result was the decision to establish a collaborative effort between the Center for Medieval and Renaissance Studies and the Graduate School of Library and Information Science toward the development of proposals for the management of the overall project for the Repertorium Columbianum and for production of Volume 12, the index to the entire publication.

This project represents a major multi-national, multi-institutional effort of substantial visibility and importance. It illustrates the needs for information resources not only as part of the substance but as the basis for management of such efforts. It will draw on both library and computer resources. There is clear need for development of a capability to support faculty with managerial tools for scheduling, financial control, logistical control, and intellectual control of large-scale projects. This is especially significant in the humanities, in which such projects are relatively rare. The Repertorium Columbianum project provides a clear example of the needs for information resource support to inter-institutional research projects.

Latin American Universities. There is an active effort at UCLA to build relationships with universities in other countries. A specific example is with those in Brazil, in which information resources play an especially central role -- the development of computer communication with Brazil, the sharing of library cataloging data with the University of Sao Paulo, and the study in specific academic areas (as will be detailed later). More generally, these kinds of efforts have been initiated in several of the Latin American countries under the aegis of the Center for Latin American Studies.

Training Foreign Librarians. The Graduate School of Library and Information Science, together with the ORION User Services Office are repeatedly in the position of needing to provide instructional services in support of training foreign librarians. One of the sub-projects of the CLR program has been focused on means for meeting those needs, using the example of librarians from Brazil. Another led to funding from Unesco of a training manual for the use of microcomputers in Latin American libraries and other information activities.

Department of Neurology. This sub-project was focused on the development of a microcomputer based system for management of a patient record file of data on surgery for epilepsy. It represents a context of multi-institutional cooperation, with the need to establish standards and procedures for the creation and maintenance of data files of critical importance to all levels of academic responsibility -- teaching, research, and public service. It demonstrates that there is need for a consulting service for faculty needing to establish inter-institutional data files.

ACQUISITION OF FOREIGN MATERIALS.

Information Need

The acquisition of information materials from foreign countries is a problem especially acute with respect to the world's "developing areas", representing large populations and vast geographic areas about which our

knowledge is at best fragmentary. Academic interests require active research programs in several areas of concern with respect to developing countries: language and literature, society and economy, agriculture and industry, medicine and health, the arts and the sciences.

Implications for Strategic Planning

In the summary report on language and area studies, Beyond Growth, prepared by the Association of American Universities, library and information resources were identified as a crucial problem. Among the specific issues of concern were five that are especially relevant to strategic planning for information resources: 1) There is a shortage of staff with the professional competencies in both language and area studies, on the one hand, and library and information management, on the other. 2) Except for the activities of the three national libraries -- the Library of Congress, the National Library of Medicine and the National Agricultural Library -- there is almost no sharing of foreign information resources between government and academic research programs. 3) There is no inventory of foreign materials in library collections, of periodical subscriptions, of federal government information services, nor of the extent to which any of these materials are covered by indexing and abstracting services or online information services. 4) There is no general information concerning availability of foreign information resources from governmental agencies or of restrictions on their use. 5) There is no evidence of the utilization by government agencies of foreign information resources available in university library collections or even of the awareness of such resources.

Beyond Growth recommends specific efforts be undertaken to deal with the problems, especially in recognition of the technological changes occurring in the means for acquiring, storing, accessing, and distributing of library materials and other forms of information resources. The report emphasizes the need to pay special attention to ephemera that tend not to be integrated into library collections.

The report focused on these kinds of problems within the U.S., but it is important to note that they are even more critical in the developing countries themselves. Many of them lack adequate knowledge of the information about their own countries and their neighbors, not even to consider information about the U.S. They have poor or non-existent means to identify publications; they lack means for logistical support for modern information technologies; they do not have the professional information manpower to provide adequate information services.

CLR Sub-projects and Other Relevant Activities

A number of CLR sub-projects were initiated to examine this area: in the Center for African Studies, in the Center for Language Education and Research, in the Center for Latin American Studies.

Center for African Studies. As described above, the generic concern of the study undertaken in the Center for African Studies is on the needs for information resources in support of "developing countries research". This

includes the needs both for academic research in the U.S. and for developing countries themselves. Issues include needs for professional staff qualified to develop such resources, statistical data about availability of information resources in the U.S. in particular geographical areas and subject, the forms and kinds of information resources needed, and the use of such data in support of research and teaching.

This project has strategic significance, cutting across almost the entire array of potential goals. There are immediate tactical implications in the need for further development of the UCLA Library's ORION system, both technically (to meet the needs in support of projects) and staffing (to provide training and consulting services). There are operational implications in the establishment of a capability to produce a specialized bibliography, using a mixture of personal computers, the ORION system, external data services, and UCLA library resources.

Center for Language Education and Research. A focus of concern in the Center for Language Education and Research is on the needs for information resources in support of research and instruction in "rarely taught languages". Issues include the form and availability of such materials and the means for gaining access to them.

This project has multiple strategic significance, cutting across almost the entire array of potential goals. There are immediate tactical implications in the need for further development of the UCLA Library's ORION system, both technically (to meet the needs in support of projects) and staffing (to provide training and consulting services). Of specific technical concern are the problems of dealing with complex diacritics in the data files of the Center for Applied Linguistics; that is a problem that have much wider implications, though. There are immediate operational implications in the establishment of a capability to provide access to data files through the UCLA ORION system.

Center for Latin American Studies. This sub-project had several foci: the use of computer networks for communication with Latin American countries, the need for training materials for preparing information workers in the use of microcomputers and computer networks in Latin American countries, the maintenance of statistical data files on those countries. One effort led to the contract from Unesco, through the International Federation of Library Associations, for the development of a training package for computer use by information workers in Latin American countries. Publication of Statistical Abstract of Latin America through the use of computer techniques has immediate tactical implications in the need for development of the means for assisting in the conversion of a manual system for publication to a computer-based one. As a result, this sub-project has multiple strategic significance, cutting across almost the entire array of potential goals. To illustrate the breadth of information needs, the following lists specific interests of faculty and graduate students at UCLA just in the area of Brazilian studies:

anthropology, Afro-American cults, race in formation of national identity;

regional development, international development, environment;

prevalence of AIDS, epidemiology of respiratory disease, ethnobotany and medicinal plants, public health in Brazil;

Spanish and Portuguese literature, Brazilian literature, Afro-Brazilian folk and religious music, Brazilian art, 19th Century Brazilian history;

television industry in Brazil, computer communication with Brazil, development of automated library systems;

environment, community organization, trade and investment practices, international banking and finance.

LIBRARY SERVICES

Information Need

The development of library services as tactical and operational responses to strategic needs is a continuing requirement.

Implications for Strategic Planning

These kinds of activities lie at the very cutting edge of transition from strategic planning into tactical and operational planning. They are the point at which wishes and hopes get translated into commitments of resources; they are the means by which experiments become realities.

CLR Sub-projects and Other Relevant Activities

Several projects were carried on within the UCLA Library system and its branches. Each was designed to experiment with a type of library service. Beyond them, though, are the results from ongoing activities in the tactical and operational development of library services; many of these are impossible to separate from initiatives of the CLR projects even though they may not have been explicitly supported by it.

ORION Databases. Just this year has witnessed the addition of new databases to the ORION online public access catalog, beyond the catalog of the UCLA Library itself: Chicano Studies Library catalog, the Ethnomusicology Library catalog, the Film and Television Archive, the ISSR Data Archives, citations to journal articles on microcomputers, the Water Resources Archives catalog. They represent exactly the kinds of materials that a single-point of access must include.

Expert Reference. There is need to develop expert systems and generalized expert system approaches for applications in libraries. Developed systems should be easily transportable and made available for libraries for a variety of in-house local system uses. A sub-project within the GSLIS was focused on this need, with specific concern with reference work. It has led to a continuing effort on the part of the responsible faculty member.

Ready Reference. A project was initiated within the College Library and then experimented with in three or four others. It involved the conversion of ready-reference files at a number of libraries, both on campus and elsewhere (at the Los Angeles Public Library, in particular), into computer databases. The objective was to determine the feasibility of microcomputer support to the ready reference function, on a shared basis. Initially, the database maintenance and search software was a quite expensive and sophisticated package; early on, though, it was seen that the functional needs could be met with a much simpler approach -- the use of "personal file management software". Currently, the system is now operational (using a $60 package called MemoryMate) in five campus libraries; current experiments are with the means for update that will be both efficient and assure consistency of the shared files as well as meeting the individual needs of each library.

Current Contents Services. A project was initiated in the Education/Psychology Library to experiment with a current contents and journal delivery service. It is now completely supported by the fees paid by the subscribing members of the faculties served.

Inventory of Campus Databases. A project is continuing under the management of the UCLA Librarian to identify, to the extent possible, the full array of databases available on campus. These include those that are formally acquired -- such as in the ISSR -- those that are associated with large scale projects, and those that are maintained by individual faculty. The strategic objective is to establish the basis on which catalog entries for databases can be incorporated into the ORION online public access catalog. For the ISSR databases, this has already been done, but for the fuller array the inventory will be an essential first step.

Installation of CD-ROM Databases. CD-ROM data bases have now become an evident resource in the UCLA Library System. Initial experiments within the GSLIS were shortly followed by installation of Dissertation Abstracts, of the Agnelli Foundation's Videodisc Encyclopedia of Italian Civilization, and of numerous others.

INFORMATION CENTERS

Information Need

There are needs for activities that will focus on acquisition of information resources needed for specific academic programs. They require professional expertise in both librarianship and subject related analyses.

Implications for Strategic Planning

These kinds of activities require support tools in acquisition, in staffing, in analytical tools.

CLR Sub-projects and Other Relevant Activities

Several of the projects were concerned with the establishment of an information center specific to academic programs. While this brings a sense

of deja vu, it reflects that fact that there is continuing need to establish highly focused resources, staff, and facilities to serve the needs of specific investigators, projects, and academic areas.

School of Engineering, Department of Chemical Engineering. As a result of discussions with the Dean of the School of Engineering and the Chairman of the Department of Chemical Engineering, needs were identified for information resources in support of Hazardous Substance research and in industrial partnership. The result was a set of specifications for establishing an operational service. Of special significance is the need for geographic indexing and retrieval of textual, numeric, and perhaps image data. A proposal was submitted to the National Science Foundation for a major research program on Hazardous Substances; it was been funded and was initiated in May 1987. Included among the tasks is establishment of a Hazardous Substances Information Center as the operational service. This project was implications for virtually every one of the potential strategic goals. Of special importance are two aspects: the development of a geographic database capability and the potential of a national service. There are immediate tactical implications arising from the relationship between such a substantive information center, the University Library, the ORION system, the ORION User Services Office, the computing facilities on campus, external sources of data, the range of potential users.

Social Welfare. The School of Social Welfare has initiated a program of Intervention Research. It requires establishing an information center to accumulate the relevant data.

Institute for Social Science Research. The Immigration Research program of the ISSR has initiated an information center in support of that area of research. Two sub-projects were specifically concerned with the development of the necessary resources.

USER INTERFACES

Information Need

Among the essential tools in implementing new technologies is effective interfaces with the users of them.

Implications for Strategic Planning

Much of the intelligence and ease of use that can be incorporated into interfaces for end users of information systems can best be done at the workstation level. Microcomputers are the logical terminal/workstation choice. Development of these interfaces needs to occur at several different levels and on a variety of machines to support a variety of user needs. This implies that library administrators must specify and require vendors to place more emphasis on the development of intelligent microcomputer interfaces and microcomputer integration as the foundation for the scholar workstation. Library systems staff and/or computer center staff must begin to develop local micro-based software for distribution to the campus community which will assist users in maximizing use of the available information resources and will provide the necessary navigation amongst local and remote services. Library administrators

should purchase microcomputers for installation and as replacements for existing terminals as replacements are required. Library administrators must commit resources to hiring and/or training staffing systems design and microcomputer program capabilities.

The underlying assumptions are that the academic world will see a universal use of computers. Personal computers therefore will be access means most readily available and responsive to needs. As a result, there must be at least minimal standards for interconnection and availability should be distributed in library facilities. However, it is necessary that operations recognize the sociology of user, the nature of"personal" computing, the range of work styles, the need for self-service and self-sufficiency. Specialists and technical consultants are necessary, but expert systems technology may provide the means for supplementing them.

There is evident need for ability to produce hard copy, so printers must be widely available. There is also need for access to centralized library facilities and means for distributed video output, optical scanning facility, fax, and optical disk access.

CLR Sub-projects and Other Relevant Activities

Two sub-projects were initiated in this area of development.

Department of Psychology. The focus of this sub-project was on the effect of technology, such as student workstations, upon the process of education, one of the crucial issues in effective use of computer methods in learning. There is an example of the tactical and operational needs in the WANDAH facility at UCLA, an example of the type of learning environment to be considered.

Graduate School of Library and Information Science. The concern of this sub-project was with the operational evaluation of "scholars' workstations" that combine access to a variety of information resources, including CD-ROM publications. An experimental workstation was received from University Microfilms, along with experimental databases (Dissertation Abstracts and INSPEC) and graphic files (Engineering Index journal page images) in CD-ROM form. It was evaluated in the GSLIS for operational capabilities. The vision of a scholar's workstation has existed at least from the time of Vannevar Bush's MEMEX; it has profound implications for the entire range of strategic planning concerns.

DIGITIZED IMAGES

Information Need

Without question, digitized images have become vitally important to academic programs across the entire campus. This new form of data poses both tremendous potential and monumental problems. The potential, of course, derives from the new means for conceptualization of problems that are created by this kind of technology. The problems arise from the fact that the amount of data that can be generated in this form -- from satellites, instrumentation, publication, conversion -- exceeds by orders of magnitude that normally

considered as a library problem. Yet all of the functional needs, for storage, cataloging, access, and processing must be dealt with.

At least three categories of digitized image data can be identified. The first results from conversion of source data to digitized image form; this arises in FAX transmission, for example; it arises in the preservation of brittle books by conversion to optical disk images; it arises in the conversion of motion picture film to optical disks. The second arises from algorithmic production of images, as from computer aided design, architectural design, or cartooning. The third arises from the monitoring or observation of physical processes; this is illustrated by data from satellites scanning the earth and other planets; it includes data from scanning of persons, as in radiology and neurology.

It is the third category that raises truly awesome spectres of file sizes, since the magnitude of files that can be created in this way is orders of magnitude greater than any existing library.

Implications for Strategic Planning

Several sub-projects were concerned with the issues in management and use of these kinds of data. Together, they raise some problems of strategic significance. Primary among them is the overriding concern with the management of the files themselves; here there needs to be fundamental research on the organization of such files and on the means for retrieval from them.

Almost equally important, though, are administrative concerns about access to facilities, resources, and equipment needed to acquire such data and to analyze it -- spectral analyzers, monitors, communication lines. Among the necessary supporting equipment are super-computers, needed because the volume of processing required for use of digitized images exceed the capacity of even very large mainframes.

CLR Sub-projects and Other Relevant Activities

Graduate School of Library and Information Science. A project within the GSLIS was concerned with the use of digitized images for the preservation of brittle books.

College of Fine Arts. A sub-project in the College of Fine Arts was concerned with the use of digitized images in instruction in film.

School of Medicine. Three sub-projects were supported in the School of Medicine: One was in the Department of Neurology, the second in the Department of Pediatrics, the third was in the Department of Radiological Sciences. Each was concerned with the problems in management of digitized images files that were growing so rapidly as to become unuseable without careful organization.

School of Architecture and Urban Planning. In the same vein, the sub-project within the School of Architecture and Urban Planning focused specifically on the needs for management and use of digitized image files.

School of Engineering. While there was not a sub-project in the area of CAD-CAM specifically funded under the CLR project, it clearly exemplifies the kinds of needs that arise in digitized image management.

FAX Communication. There was not a specific CLR sub-project focused on the importance of FAX communication. It is evident, though, that it has become a vital tool for communication. If nothing else, it has virtually destroyed policy barriers to international communication.

Administrative Data Files. The use of digitized image storage for administrative data files, while outside the narrow scope of academic needs, is worth consideration here as part of academic strategic planning. The concept is that scanned administrative documents can be stored in electronic form, with automated work assignment and scheduling, automated work-flow control, and automated indexing and file searching. The benefits arise from increased staff productivity, reduced costs for paper handling, improved control, better response to needs.

This approach is feasible because the supporting technologies are all now here. The scanners are available and are inexpensive; the transmission capacity (now 100 M bit/sec) is operational; the processing power is now widespread, with microcomputers capable of meeting most needs; the software development is well in hand; the capacity for image storage (as evidenced by IBM's ImagePlus system) is available.

Use of this approach is likely when there are large amounts of data produced (crowded files, multiple documents, extensive use of microforms); when data cannot be keyed (for example: drawings, handwritten, signatures); when there is need for frequent access and retrieval (the same information being used by many different people, with frequent inquiries); when extensive processing (multiple view, complex routing, decisions) is involved; when the information is critical or errors costly; when the organization is amenable (willing to change, able to visualize the benefits, understanding the effort required).

OFF-CAMPUS USERS

Information Need

There are trends toward offsite storage and remote catalog access. They require better browsability of the online catalog. Bibliographic records should be enhanced with additional access points. There is increasing demand for easy user interfaces; often systems are good for the staff but difficult for the user. Administrators must require vendors to be concerned about user interface issues as well as technical aspects of their systems. Systems designers must think of the user as they develop automated systems for libraries.

Implications for Strategic Planning

Librarians should concentrate on making access to library information services non-location specific. This will require a reorientation of staff

thinking and of job functions and organization. Information services should be available online and available remotely. Initial steps to begin, or continue, the transition process in all libraries might include: active promotion of telephone service for reference and document delivery; active promotion of electronic mail use for reference and interlibrary loan; eventual incorporation of all electronic information services through remote access.

CLR Sub-projects and Other Relevant Activities

School of Medicine -- Drew Memorial Hospital. The focus of this sub-project was on "the influence of new information resources on clinical teaching". It includes coverage of simulations, instant access to information through Medline, decision support, use of computers in curricula. Issues include variations in needs and use across disciplines or across groups of faculty and students. This study relates to the impact of information resources upon the quality of teaching; it deals specifically with the expected changes due to developments in technology.

EXPERT SYSTEM DEVELOPMENT

Information Need

The development of "expert systems" (defined here as the combination of four component elements: 1) an interface for communication with users in the formulation of queries, 2) a decision tree for determining how to interact between the users and the databases, 3) a generic database to support the decision tree, and 4) a factual database. The evidence of the literature is that this will be an important area of research by faculty of the university in every academic discipline and professional area.

Implications for Strategic Planning

Implementation of expert systems if the use of information resources will require professional staff expertise.

CLR Sub-projects and Other Relevant Activities

School of Law. The CLR sub-project in the School of Law was, among other things, concerned with development of expert systems in the law.

Graduate School of Library and Information Science. This sub-project was focused on development of expert systems in support of ready reference in academic libraries.

INDEXING & ABSTRACTING SERVICES

Information Need

Indexing and abstracting systems are the essential support tools for information access, whether in printer form or through online access. These tools are now well developed in the physical and biological sciences, in engineering, in professional fields such as the law and medicine. They are far

less well developed in the humanities and arts.

Implications for Strategic Planning

Production of these tools involves costs greater than a single institution usually can support. The implication is that community of universities and academic research libraries needs to develop policy positions that will lead to inter-institutional cooperation or to commitment of national funding to the needs of the humanities and arts.

CLR Sub-projects and Other Relevant Activities

Department of Dance. The CLR sub-project in the Department of Dance has identified a need for an indexing service related to reviews of dance performances.

Department of Music. The CLR sub-project in the Department of Music is concerned with indexing of sound recordings.

DESKTOP PUBLISHING

Information Need

No sub-project specific to desk top publishing was included among those proposed by faculty. Again, as with the importance of print publications, one must infer the need from the other projects. Throughout them, there is clear evidence of the needs to support this kind of activity. From the perspective of a faculty member there are evident values in speed of getting material into distribution, in control of the end product.

The most significant evidence of need is the dramatic increase in the use of microcomputer based word processing by faculty. Five years ago, perhaps 30% to 40% were using this technology; today, it is certainly about 90%.

Implications for Strategic Planning

Equally clear are the problems that desk top publishing implies. From the perspective of departmental administration, the management of resources and the potential workload in a highly labor intensive operation are quite worrisome problems. (With all due respect to the virtues of the computer, data entry, formatting and design, editing, preparing for production, and final publication all require major efforts.) It can be consuming of faculty time -- as long as they find it stimulating -- and consuming of support staff and resources -- when the faculty lose interest. From the perspective of a campus administrator the problems are likely to be monumental.

Beyond these institutional concerns, there are even larger problems in control. Indeed, "desk top publishing" is virtually an oxymoron that confuses the real role of the publisher with that of the printer. There are problems in quality control, in ensuring a publishable product, in marketing and distribution. But most important are the scholarly aspects of control: refereeing, reviewing, assuring integrity of reference.

CLR Sub-projects and Other Relevant Activities

There were no CLR sub-projects proposed in this area, important though it is. Evidence must be drawn from other relevant activities.

Online Electronic Journals There is a slow but steady development of scholarly communication through electronic mail. Some has been formalized as "electronic journals", though most is still informal.

The Electronic Manuscript Project of the AAP. The Association of American Publishers, recognizing the increasing use bu authors of microcomputer based word processing, carried out a project to establish standards for encoding of electronic manuscripts to facilitate the communication between authors, publishers, and printers.

Department of History. A CLR sub-project in the Department of History was concerned with the need to use computer processing on Aragon-Catalan script.

Department of English. While not supported by a sub-project of the CLR program, interests in the Department of English at UCLA are highly relevant. The desire is to create a "Center for Electronic Text" in order to explore the personal computer as a rhetorical device. That is, what happens to written text, both literary and non-literary, when it is displayed on an electronic screen? The concern is with such questions as the history of electronic display, its present state and foreseeable future, the origin of electronic aesthetics in theory and practice of Italian Futurism and Dada, and inquiries into the implications for post modern aesthetics and literary theory of a volatile, electronic art object.

DATABASE DEVELOPMENT

Information Need

Throughout the university, faculty are creating databases, but they frequently need help in doing so. Several of the projects have essentially represented needs for consulting support in design of database structures, in indexing of data files, in downloading data from external sources. This clearly represents a significant need and doubtless one that will continue.

Implications for Strategic Planning

There is need for library staff to serve as consultants to database development, including advice on data structures, on features of relevant software, on the availability of source data to be downloaded into personal files, on the copyright and licensing requirements.

CLR Sub-projects and Other Relevant Activities

Department of Neurology. This sub-project was focused on the development of a microcomputer based system for management of a patient record file of data on surgery for epilepsy. It represent a context of multi-institutional

cooperation, with the need to establish standards and procedures for the creation and maintenance of data files of critical importance to all levels of academic responsibility -- teaching, research, and public service. It demonstrates that there is need for a consulting service for faculty needing to establish inter-institutional data files.

Institute for Social Science Research. This sub-project was focused on the needs in support of campus research related to "immigration". Funds were committed for two supporting studies: 1) establishing an historical archive and 2) creating a visual archive to interface with the Museum of Cultural History. Research related to immigration is of special concern to UCLA, given the dramatic and rapid effects it was on the Southern California community. The opportunities for community service to ethnic populations must be of strategic importance.

Department of Film and Television. This CLR sub-project was concerned with the development of a television database.

FILE CONVERSION

Information Need

As we move increasingly into computer-based processing of data, the need to convert existing data sources to digital text (or digital image) form arises across the entire campus.

Implications for Strategic Planning

Optical character reading equipment is now well enough developed that is can effectively be used in support of this functional need. Policies need to be established to ensure efficient use of such equipment, including inventory of equipment, announcement of availability, assessment of applicability, and allocation of use.

CLR Sub-projects and Other Relevant Activities

Belt Library of Vinciana. The focus of this sub-project was on the conversion of the catalog and index files of the Belt Library of Vinciana. Tests were conducted to determine the feasibility of using Optical Character Reading equipment for catalog and index conversion. A related project, under sponsorship of the National Agricultural Library, was for evaluation of OCR equipment for bibliographic purposes. The conversion test established procedures for ensuring image quality, registration, and avoidance of problems that reduce the quality of conversion. Data were accumulated on error rates, time for correction, and time for processing. They substantiate the general picture that OCR equipment is effective for conversion purposes if the reliability is greater than 95%; below 95%, it is not effective.

Department of Music. One sub-project was concerned with the conversion of catalogs in the Department of Music.

Index to Christian Art. Nothing was done on this campus with respect to conversion of the files of the Index to Christian Art, but it still represents an opportunity of tremendous value to scholarship in all of the humanities.

Center for Folklore and Mythology. The files of the Center for Folklore and Mythology are all in manual form. In particular, the library of 6000 volumes, 5 archives, including Ethnomusicology, is all manually cataloged. Again, nothing was done on conversion of these files, but it too represents an opportunity of value to many fields.

PROJECT MANAGEMENT

Information Need

While the physical science and engineering have well established means for management of large-scale project, the humanities, social sciences, arts, and even the biological sciences do not. Yet, there is increasing likelihood that such projects will develop in these other academic fields. There is need, therefore, for means for support to the management of such projects.

Implications for Strategic Planning

There needs to be consultant capabilities -- in the computing center, in the library, in the campus office of contracts and grants, in the campus administration -- to provide these kinds of project management support tools and consultative advice on use of them.

CLR Sub-projects and Other Relevant Activities

Repertorium Columbianum. The Repertorium Columbianum is a project that involves investigators from throughout the world. It requires communication of large amounts of information among them in order to ensure consistency in treatment of common standards in translation. It require coordination in order to maintain progress toward the objective of publication within a very tight time schedule.